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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/511,860	10/18/2004	Peter Korner	SALB.P0127US	6636
58342 7590 01/06/2009 WARREN A. SKLAR (SOER) RENNER, OTTO, BOISSELLE & SKLAR, LLP 1621 EUCLID AVENUE 19TH FLOOR CLEVELAND, OH 44115				
EXAMINER				
FAULK, DEVONA E				
ART UNIT		PAPER NUMBER		
2614				
MAIL DATE		DELIVERY MODE		
01/06/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/511,860

Applicant(s)

KORNER, PETER

Examiner

DEVONA E. FAULK

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/16/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/18/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CIS)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, regarding the newly recited claim language, filed 9/16/08, with respect to the rejection(s) of claim(s) 1-14 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Case and KSR.
2. Claims 8-10 are cancelled.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1 and 12-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Case (US 6,335,973) in view of Bloy et al. (US 4,853,963).

Regarding **claim 1**, Case discloses a device for increasing a perceived bandwidth in an audio signal path with limited bandwidth (abstract, Figure 11) comprising:

an input terminal for connecting an audio signal (terminal 140, Figure 11; column 5, lines 11-15);

an output terminal for connecting a speaker unit for generating an acoustic signal (terminal 142, Figure 11; column 5, lines 12-17);

a splitter adapted to divide the audio signal path from the input terminal into two branches (point where signal from 140 is split into signals 146 and 148; Figure 11), the branches comprising:

a first branch for passing a first part of the audio signal (branch through which signal 146 is passed);

a second branch for processing a second part of the audio signal (branch through which signal 148 is passed, Figure 11); and

wherein the second branch comprises means for producing harmonics of the audio signal (block 152, Figure 11; column 5, lines 19-23); and

a combiner for adding the harmonics produced in the second branch to the first part of the audio signal in the first branch at the output terminal (amplifier 154, Figure 11; column 5, lines 19-23); and

wherein the means for producing harmonics comprises a harmonic generator for producing harmonics (implicit to block 152; column 5, lines 19-23).

Case fails to disclose producing out-of-band harmonics.

Bloy teaches of out-of-band harmonics that enhance or increase a perceived sound pressure level of the audio signal (column 4, lines 39-44) .

Bloy fails to disclose explicitly teach of adding out-of-band harmonics to the signal.

The prior art, as evidenced by Case, has recognized the benefits of adding harmonics to a signal. It would have been obvious to try adding out-of-band harmonics to a signal with a reasonable expectation of success in order to restore voice character and increase intelligibility (Bloy, column 4, lines 39-44).

Regarding the improving an alert function of the audio signal language, MPEP 2114.....states that while features of an apparatus may be recited either structurally or functionally, claims <directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. Also, a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Case as modified discloses that the invention can be applied to portable telephone audio signals and computer audio files (Case; column 1, lines 28-40; column 8, lines 35-44; column 7, lines 36-60; Figures 21 and 22).

Case as modified fails to disclose that the audio signal is a polyphonic ring signal. The examiner takes official notice that it is well known in the art that mobile phones can generate polyphonic ring signals and that polyphonic ring signals are computer generated.

The prior art contained a based method upon which the claim invention can be seen as an improvement. The prior art, discloses a method of improving the quality of a

signal by adding harmonics to the signal. One of ordinary skill in the art would have recognized that applying the known technique to polyphonic ring signals would have yielded predictable results and resulted in an improved system.

Regarding claim 12, Case modified discloses wherein the device is used in a communication apparatus for increasing the bandwidth (Case; abstract; column 1, line 53-column 2, line 9).

Regarding claim 13, Case as modified discloses that the invention can be applied to portable telephone audio signals and computer audio files, of portable telephones and of polyphonic ring signals (Case; column 1, lines 28-40; column 8, lines 35-44; column 7, lines 36-60; Figures 21 and 22; See rejection of claim 1). A polyphonic sound effect generator is implicit to polyphonic ring signal being produced. All elements of claim 13 are comprehended by the rejection of claim 1 (See Case and Bloy as applied above to claim 1).

Regarding claim 14, Case as modified discloses that the device being used in a communication apparatus wherein the communication apparatus is a portable telephone, a pager, a communicator or an electronic organizer (See rejection of claim 1). All elements of claim 14 are comprehended by the rejection of claim 13.

5. **Claims 2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over Case (US 6,335,973) in view of Bloy et al. (US 4,853,963) in further view of Oda (US 5,923,766) in further view of Feremans et al. (US 5,828,755).

Regarding claim 2, Case as modified discloses that the means for producing harmonics includes a filter and teaches of an amplifier that is not part of the harmonic generator. Case as modified fails to disclose wherein the means for producing harmonics further comprises a filter. Oda disclose wherein the means for producing harmonics further comprises an amplifier (means for producing harmonics includes low pass filter full wave rectifier and amplifier, Figure 1; column 4, lines 50-59). It would have been obvious to modify Case as modified so that the amplifier is part of the harmonic generator in order to amplify the harmonics produced. Case as modified fail to disclose that the amplifier is adjustable. Feremans discloses an adjustable amplifier (column 4, lines 45-47). It would have been obvious to modify Case as modified to make the amplifier adjustable so that the user can control the level of the audio output.

Regarding claim 3, Case as modified discloses wherein the filter is arranged to separate an upper portion of a pass band as an input to the harmonic generator (Oda, low pass filter 1 reads on the claim language, Figure 1).

Regarding claim 4, Case as modified discloses wherein the harmonic generator comprises a nonlinear circuit (Case, Figure 11, block 152 implicitly comprises a nonlinear circuit; See Case as applied above to claim 1).

6. **Claims 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Case (US 6,335,973) in view of Bloy et al. (US 4,853,963) in further view of Oda (US 5,923,766).

Regarding claim 6, Case as modified discloses adding harmonics. Case as modified fails to disclose adding second harmonics. Oda discloses wherein the means for producing harmonics is arranged to add second harmonics (full wave rectifier and low pass filter no. 2, Figure 1; column 4, lines 53-59). It would have been obvious to modify Case as modified so to add second harmonics in order to produce an improved output signal.

Regarding claim 7, Case as modified discloses adding harmonics. Case as modified by Bloy fails to disclose adding even harmonics. Oda discloses wherein the means for producing harmonics is arranged to add even harmonics (column 4, lines 52-59) even harmonics in order to produce an improved output signal.

7. **Claim 5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Case (US 6,335,973) in view of Bloy et al. (US 4,853,963) in view of Oda (US 5,923,766) in further view of Feremans et al. (US 5,828,755) in further view of Runion et al. (US 6,865,430) .

Regarding claim 5, Case as modified discloses a harmonic generator. Case as modified fails to disclose that the harmonic generator comprises a digital signal processor DSP. Runion discloses a harmonic generator that comprises a digital signal processor (Figure 2, abstract; column 1, line 62-column 4, lines 17). It would have been obvious to modify Case as modified so that the harmonic generator comprises a digital signal processor in order to provide the capability of real-time processing and processing of digital signals.

8. **Claim 11** is rejected under 35 U.S.C. 103(a) as being unpatentable over I over Case (US 6,335,973) in view of Bloy et al. (US 4,853,963) in further view of Townsend et al. (US 6,606,388).

Regarding claim 11, Case as modified discloses a first branch. Case as modified by Bloy fails to disclose that the first branch includes a delay or a phase shift. Townsend discloses a method and system for enhancing audio signals including a first branch comprising a delay (Figure 2; column 5, lines 6-11). It would have been obvious to modify Case as modified to include a delay in the first branch in order to ensure that the high frequency and low frequency signals stay aligned.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVONA E. FAULK whose telephone number is (571)272-7515. The examiner can normally be reached on 8 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devona E. Faulk/
Examiner, Art Unit 2614